REMARKS

Claims 1-17 are pending in this application. By this Amendment, claims 1, 4, and 8 are amended. The amendments to the claims are made for clarity. No new matter is added.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (as the amendments amplify issues previously discussed throughout prosecution); (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

The courtesies extended to Applicants' representative by Examiner Bryant at the interview held February 23, 2011, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' separate record of the substance of the interview.

I. Rejections Under 35 U.S.C. §112

The Patent Office: (1) rejects claims 1-17 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the enablement requirement; and (2) rejects claims 1-17 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. These rejections are respectfully traversed.

Claims 1, 4 and 8 are amended, as shown above, to obviate the rejections, as discussed and agreed upon during the February 23 interview. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

II. Allowable Subject Matter

The Patent Office indicates that claim 17 contains allowable subject matter (Office Action, page 6). Applicants appreciate this indication of allowable, but respectfully submit that claims 1, 4 and 8 are patentable for at least the reasons presented below.

However, as discussed and agreed upon during the February 23 interview, should the Examiner remain unconvinced in view of the arguments presented herein, the Examiner is respectfully requested to contact the undersigned at the telephone number set forth below, and request entry of an Examiner's Amendment to place this application in condition for allowance.

III. Rejection Under 35 U.S.C. §103

The Patent Office: (1) rejects claims 1-5, 8, 9 and 12 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,962,853 ("Endo") in view of U.S. Patent No. 4,531,110 ("Johnson"); and (2) rejects claims 6, 7, 10, 11 and 13-16 under 35 U.S.C. §103(a) as allegedly being unpatentable over Endo in view of Johnson and further in view of U.S. Patent No. 5,821,598 ("Tu"). These rejections are respectfully traversed.

The Patent Office alleges that Endo discloses an apparatus and method for bolometric detection of infrared radiation allegedly comprising various features recited in claims 1, 4, and 8. The Patent Office further alleges that Endo discloses using a Mn-Ni-Co-oxide thermistor material (Office Action, page 5). However, the Patent Office concedes that Endo does not disclose a spinel ferrite structure, as recited in claims 1, 4 and 8. The Patent Office applies Johnson to allegedly cure this deficiency of Endo, and alleges that it would have been obvious for one of ordinary skill in the art to have replaced the Mn-Ni-Co oxide thermistor material of Endo with ferrite-based spinel thermistors of the formula $M_{1-x}R_zFe_{2+x+z}O_4$ as disclosed in Johnson. Applicants respectfully disagree.

Johnson is directed to thermally sensitive resistors (thermistors) comprising a layer of materials with the composition: $M_{1-x}R_zFe_{2+x+z}O_4$ (Johnson, col. 2, lines 14-20). However, the materials of Johnson's formula $M_{1-x}R_zFe_{2+x+z}O_4$, such as $Mg_{0.9875}Fe_{2+0.125}O_4$ (where z = 0) do not comply with formula (I) as recited in claims 1, 4 and 8, where y is between 0 and 0.5 (Johnson, col. 2, lines 15-28).

Johnson further discloses heat-treating the ferrite material in an oxidizing atmosphere to increase device resistivity and obtain a higher temperature coefficient (Johnson, col. 3, lines 31-43). This oxidation treatment comprises subjecting surfaces of the ferrite material to firing at high temperatures (*e.g.*, at least 900°C) for a short amount of time to prevent the oxidized layer from becoming undesirably thick (Johnson, col. 5, lines 5-32). Nevertheless, if the layer is too thin, the device resistivity is too low (Johnson, col. 5, lines 31-32). The resulting thermistor of Johnson thus constitutes a multi-layer structure having an unoxidized substrate supporting highly resistive layers thereof (Johnson, claim 1). As a result, one of ordinary skill in the art would have had no reason or rationale to have isolated only the ferrite material of Johnson and combined the ferrite material with Endo in a manner necessary to have obtained the subject matter of the present claims, at least because Johnson teaches a multi-layer structure in order to obtain suitable thermistors.

Johnson further would have deterred one of ordinary skill in the art from selecting and isolating its ferrite material for use as a "thin layer[1]," as recited in claims 1, 4 and 8. At least because Johnson teaches that if the layer is too thin, the resistivity becomes too low, one of ordinary skill in the art would not have been motivated to have used the ferrite material of

[1] It is respectfully asserted that one of ordinary skill in the art would have understood the term "thin layer" to mean a thickness of less than several microns, and as small as fractions of a nanometer (*see, e.g.*, Handbook of Physical Vapor Deposition Processing).

Johnson, combined with Endo, in a "thin layer" application, as recited in the pending claims (Johnson, col. 5, lines 21-32).

Furthermore, mere knowledge of ferrite materials (such as disclosed in Johnson) as negative temperature coefficient thermistors is a wholly insufficient characteristic to predict that such a material would be efficient as a "sensitive material" for infrared bolometers, to one of ordinary skill in the art. More specifically, Johnson and Endo fail to disclose to one of ordinary skill in art various properties of ferrite materials as they relate to the: (1) generation of electric noise; (2) material sensitivity; (3) ability to be integrated into a specific device or structure by microelectronic methods while maintaining its basic properties; (4) ability to retain flatness after integration onto a microbridge; (5) ability to be deposited into a thin film; (6) behavior with respect to various chemical and heat treatments; (7) compatibility with bolometer structures and read-out circuitry; (8) thermal coefficient of resistance; and (9) l/f noise, all of which are key characteristics for identifying sensitive materials for use in a bolometer device (see specification, page 2, lines 9-21; page 12, lines 17-30; page 13, lines 26-35; page 15, lines 6-8; and page 16, line 1).

Accordingly, it is respectfully submitted that the Patent Office has not provided any reason or rationale for one of ordinary skill in the art to have selected a sensitive material having a spinel ferrite structure, with any reasonable expectation of success, as recited in claims 1, 4 and 8.

The Patent Office applies Tu as allegedly addressing additional features recited in dependent claims. Thus, Tu does not cure the deficiencies of Endo and Johnson with respect to claims 1, 4 and 8.

Based on the above, Endo, Johnson and Tu, in any combination, would not have rendered claims 1, 4 and 8 obvious. The remaining claims variously depend from claims 1, 4

and 8 and are patentable for at least the reasons that claims 1, 4 and 8 are patentable, as well as for the additional features recited therein.

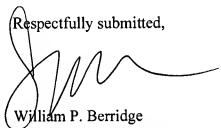
Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Petition for Extension of Time

Date: March 21, 2011

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